REMARKS

Claims 1 and 4-19 are pending in this application. Claims 8-11, 13-15, 18 and 19 are rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,989,741 to Bloomfield, *et al.* ("Bloomfield") in view of U.S. Patent No. 5,636,098 to Salfelder, *et al.* ("Salfelder"), claims 1, 4-6 and 17 over Bloomfield and Salfelder in further view of JP 9-199145, claims12 and 16 over Bloomfield and Salfelder in further view of U.S. Patent No. 5,328,816 to Tamura, *et al.* ("Tamura"), and claim 7 over the combination of Bloomfield, Salfelder, JP 9-199145 and Tamura.

Applicant respectfully traverses all of the maintained rejections.

The present invention provides fuel cells and their methods of manufacture. The fuel cells include one or more of three different mechanisms by which a polymer electrolyte film is securely adhered to a frame. The mechanisms include, the polymer electrolyte film having a water content of not greater than 4, an adhesive having a modulus of elasticity of not greater than 10 MPa after cure, and/or an adhesive having a durometer A hardness of not greater than 90 after cure. These three mechanisms have been found by Applicant to prevent the seal between the polymer electrolyte film and the frame from deteriorating. Applicant has found that the seal can deteriorate if excess water is present in the polymer electrolyte film or if the adhesive is too hard.

Applicant respectfully submits that the need for these three mechanisms nor the mechanisms themselves is recognized, taught, or suggested by the cited prior art.

For example, even combining the cited prior art as suggested by the Office Action, at best, the references only teach sectionally immersing an electrolyte film in a potassium hydroxide solution so that the particular portion of the electrolyte film has a hydrophobic property and adhering the particular portion of the polymer electrolyte film and a separator

together with adhesives including acrylics such as methacrylate, polyesters, polyamides, polyurethanes, epoxies, silicone containing adhesives, and mixtures thereof. Therefore, Applicant submits that there is no teaching or suggestion of any of the three mechanisms claimed nor any recognition of a need to improve the seal between the polymer electrolyte film and the frame by any of the claimed mechanisms in the cited prior art.

Applicant submits that the Office Action is incorrect in asserting that the mechanisms claimed would be expected. There is no discussion of the two causes for seal deterioration found by Applicant nor is there any suggestion independent from Applicant's disclosure that the polymer electrolyte film or adhesive should have the claimed properties. Therefore, while it is suggested by the Office Action that the cited prior art would be expected to have the claimed properties, Applicant respectfully submits that he can find no such teaching or suggestion within the prior art. Therefore, Applicant submits that one of ordinary skill in the art would not have been motivated to combine the cited prior art in order to achieve Applicant's claimed invention.

Applicant respectfully submits that the claimed fuel cells and methods of manufacture are not obvious over Bloomfield, Salfelder et al., JP 9-199145, and Tamura, either singularly or in combination. Thus Applicant respectfully requests allowance of independent claims 1, 8, 13, 17, 18, and 19, as well as claims 4-7, 9-12, and 14-16, at least by virtue of their dependency and additional recitations.

In view of the foregoing amendments and remarks, it is respectfully submitted that the presently pending claims are in condition for allowance and issuance of a Notice of Allowance for claims 1 and 4-19 is respectfully requested.

The Examiner is invited to contact the undersigned to discuss any matter concerning this application.

The Office is authorized to charge any underpayment or credit any overpayment to Kenyon & Kenyon Deposit Account No. 11-0600.

Respectfully submitted,

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